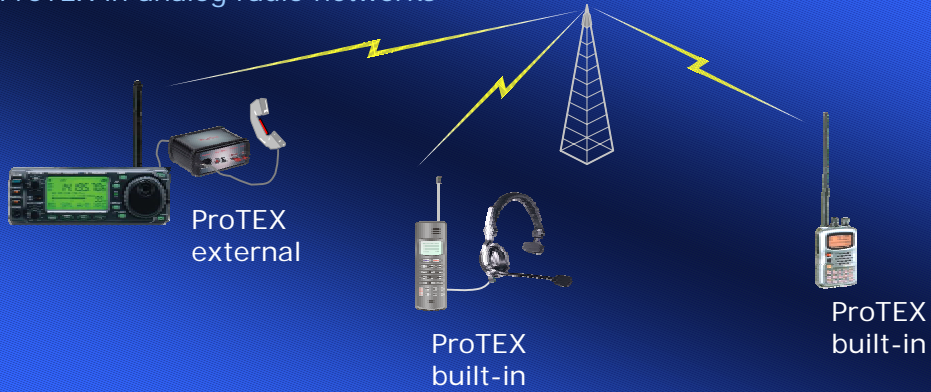


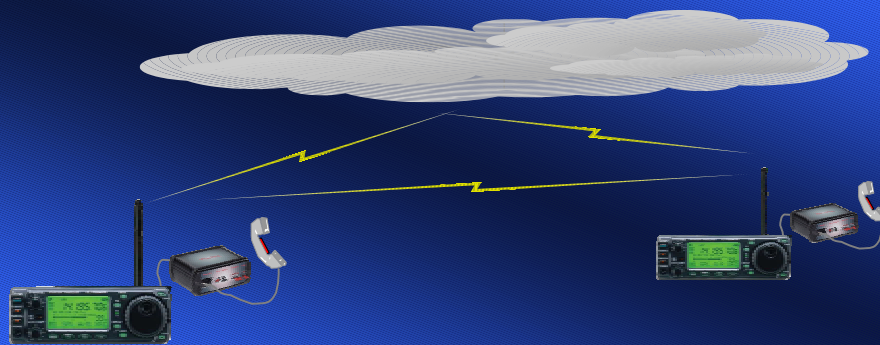
ProTEX

Applications

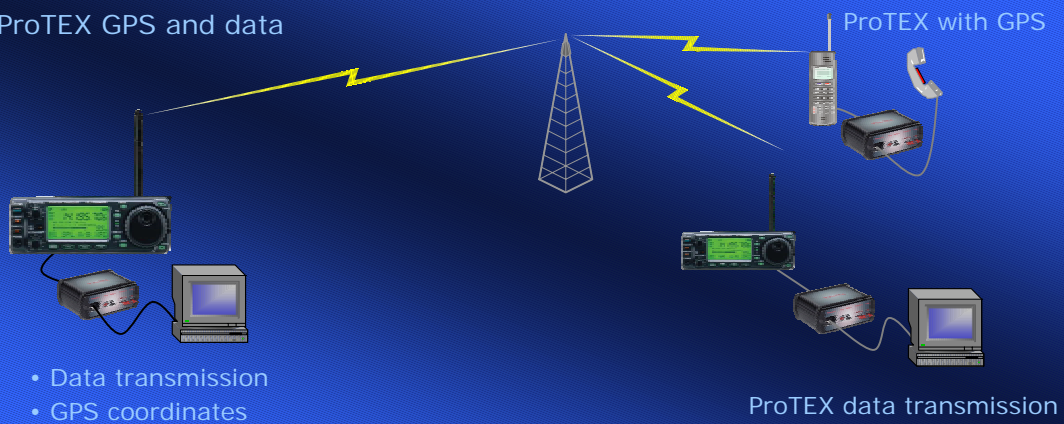
ProTEX in analog radio networks



ProTEX for HF SSB radios



ProTEX GPS and data



Operational Features

- Provision of digital top secure voice and data transmission over conventional analog radios
- Adaptable to most popular analog radios, no modification of analog radios required
- Operation of the radio does not change
- ProTEX allows immediate use, no speaker pause required at begin of message
- The digital communication ensures excellent voice quality even in the presence of strong interference
- The coverage area is equal or larger than in analog mode
- Encrypted fast and reliable data and GPS transmission possible
- Since ProTEX uses still the conventional analog radio networks as „carrier“, no new frequencies or bandwidths are required

Security Features

- Encryption
 - Proprietary highly-secure encryption procedure
 - Implementation of customer-specific encryption algorithm
 - Fast synchronization with late-entry capability
 - No error propagation

Technical Data

- Target Radios
 - VHF/UHF FM/PM radios with channel spacing 12.5 kHz, 20 kHz, 25 kHz and 50 kHz
 - HF SSB radios
- Audio bandwidth
 - For UHF/VHF FM/PM radios with channel spacing 12.5 kHz: 0.45-2.55 kHz
 - For UHF/VHF FM/PM radios with channel spacing 20/25 kHz: 0.3-3.0/3.3 kHz
 - For HF SSB radios: 0.3-2.7/3.4 kHz
 - For wideband radios: 0.3-6 kHz
- OFDM bandwidth
 - 2.1 , 2.4 , 2.7 , 3.0 and 5.7 kHz
- Data rate
 - Net rates 1.2 kbit/s up to 9.6 kbit/s
- Transmission modes
 - Simplex, Half-Duplex, Duplex
- Type of modulation
 - C-OFDM: QAM-4 to QAM-64
- Power
 - Directly from radio equipment
 - Alternatively from integrated rechargeable battery
- Coding and decoding
 - Coding: Signal code construction with 4D-Trellis code and Forney Trellis shaping
 - Decoding: Maximum-Likelihood Decoding with Viterbi algorithm and channel information usage
 - Forward error correction for data transmission: outer coding with Reed-Solomon and interleaving
 - Error detection: CRC algorithm
- Adaptation of receiver
 - Adaptive Front-end filter
 - Adaptive multistage equalizer
 - Robust channel estimation incl. flat and selective fading
- Voice Compression
 - AMBE (Advanced Multi-Band Excitation)
 - Vocoder rate 2000 bit/s or 2400 bit/s
- Late Entry capability
 - Fast synchronization
 - Immediate speaking
- USB connection
 - For key management
 - For data transmission
- Remote Control and Maintenance system (RCM)
 - User and terminal ID management
 - User and terminal authorization
 - Key Management
 - Remote re-keying over the air (OTAR)
 - Remote disabling of terminals
 - Flexible group definition



Continuous development and improvement is one of our policies – therefore we reserve the right to change specification without notice.